CITY OF LODI

COUNCIL COMMUNICATION

AGENDA TITLE: Specifications and Advertisement for Bids for Two 1200KVAR Capacitor Banks for Electric Utility Department

MEETING DATE: March 18, 1992

PREPARED BY: Electric Utility Director

RECOMMENDED ACTION: That the City Council approve the specifications and authorize advertisement for bids for the purchase of two 1200KVAR Capacitor Banks.

BACKGROUND INFORMATION: The capacitor banks are planned for installation at locations within the city to improve the electric system's power factor and to provide additional system capacity.

The bid opening has been scheduled for Wednesday. April 15. 1992.

FUNDING: The estimated cost of this purchase is $10,000, with funding available in the Electric Utility Department's Operating Fund.

Henry J. Rite. Electric Utility Director

cc: Assistant Electric Utility Director
Electrical Engineer

Prepared by Joel Harris. Purchasing Officer

APPROVED Thos. A. Peterson

THOMAS A. PETERSON
City Manager

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EQUIPMENT SPECIFICATIONS

12-KV CAPACITORS

A. GENERAL

Capacitor banks shall be rated 1200 KVAR and be utilized on a 12.0-kv (nominal) system. The banks shall consist of six (6) individual, two (2) bushing, 7.2-kv. 200 KVAR single-phase capacitors connected in a floating (ungrounded) Wye.

B. REQUIREMENTS FOR CAPACITOR UNITS

1. Standards - Capacitor units shall be manufactured and tested in accordance with the latest revision(s) of NEMA CP1 and applicable ANSI/IEEE Standards.
2. Ratings - Each individual capacitor shall be rated as follows:
   - 200 KVAR (nominal)
   - 7200 volts
   - 95-kv Bil (minimum)
3. Construction - Each individual capacitor shall be constructed as follows:
   - Paint Color: ANSI 70 Gray
   - Capable of mounting with NEMA standard 15.62" centers.
   - Bushing creepage shall be 10" (minimum).
   - Each bushing shall include an insulating terminal cover.
   - Capacitors shall contain NO PCB's.
   - All film foil construction
   - Two (2) porcelain bushings
4. Losses - Capacitor losses shall not exceed 0.2 watts/KVAR. This value is based upon being energized at rated voltage in a 40" C ambient temperature.

5. The internal corona starting voltage or ionization level shall not be less than 180% of rated voltage at 25" C.

6. Each capacitor design shall have successfully passed the applicable design tests described in ANSI and NEMA Standards (latest revision).

7. All units shall successfully pass a test where d.c. voltage at 4.3 times the capacitor-rated voltage is applied for 10 seconds minimum.

C. REQUIREMENTS FOR ASSERBLIES

1. Equipment shall be preassembled and wired ready for raising into place and bolting to the pole.

2. Equipment shall be capable of being installed in conformance with California G.O. 95 as received from the vendor.

3. Cantilever strength of the rack shall provide a safety factor of five (5).

4. Rack material shall be 6061-T6 aluminum (no finish is required) or steel. The steel shall conform to ASTK A36 (latest revision) with hot-dipped galvanized finish per ASTM A153 (latest revision).

5. Bushing air clearances between individual units shall be six (6) inches minimum. phase-to-phase and phase-to-ground.

6. Banks shall be wired in a floating (ungrounded) Wye and have a bare loop approximately three (3) inches long at each end of the neutral bus to permit attachment of grounds when required.

7. Bus wiring shall have 5-kv minimum insulation.

D. REQUIREMENTS FOR SWITCHES

1. Switches shall be rated for capacitor switching up to 1200 KVAR banks (400 KVAR per switch). Switches shall have terminal covers.

2. Switches must be supplied with 5-conductor plug and receptacle. The switches shall have two porcelain bushings. Control voltage to be 120 VAC and control circuit to include holding switch. Control wiring to be factory assembled with switch controls wired and terminated on a terminal board located in a weatherproof, frame-mounted junction box. Acceptable oil switches are:

Westinghouse	C15S15CS00
General Electric	9F90DBF142-7
Cooper Power System	KNR-KA125NR1-KA115NR

3. Capacitor switches shall be insulated from the rack by means of porcelain stand-off insulators. Minimum creepage of the stand-off insulators shall be ten (10) inches.
4. Means for grounding the switch tanks only shall be provided.
5. Grounding connector for switch tank shall be of a material compatible with switch tank finish.
6. Ground lead shall consist of 600-volt insulated copper, minimum of No. 6 AWG and shall be insulated from the rack with Schedule 80 PVC conduit.
7. Switch leads shall have three (3) inches bare section on load side to permit attachment of grounds when required.

E. QUOTATION AND DRAKING REQUIREMENTS

1. For evaluation purposes, each bid shall be accompanied by the following information for each capacitor unit:
   a. Loss versus temperature.
   b. Capacitance versus temperature.
   c. Corona starting voltage versus temperature.
   d. Maximum and average watts loss from actual production.
   e. Safe time versus current plots or allowable i^2t values.

f. Dielectric stress in volts/mil.

g. Number of series - parallel sections and the section voltage at rated voltage operation.

h. Results of all required tests:

2. Complete descriptive data with proposed drawings for all included equipment shall accompany the proposal.

3. Approval drawings are required. Two (2) sets of final drawings and instruction manuals shall be provided by the supplier.

4. Bidders shall submit information as to the chemical content of all fluids used within the capacitor units offered in this proposal. Absolutely no PCB's or any fluids containing any form of chlorinated benzines will be accepted. The nameplate on each oil-filled unit shall include the words. "fluid is less than one p.p.m. PCB."